

Missouri Business Education Competencies (Performance Standards)

NETWORK ADMINISTRATION

Course Rationale: A knowledge and understanding of networking concepts prepares students for the career area of network administration. As technology advances, the demand will continue to increase for students who are prepared to meet the technology changes in the workplace.

The following suggested competencies, developed by an advisory committee, are intended to serve as a basis for your course curriculum. The list is neither inclusive nor required in its entirety. You may select competencies from other lists, and develop competencies of your own to define the outcomes you expect your students to achieve. The Show-Me Standards identified provide a guide. If activities you choose better aligned with other Standards, you should align your competencies/objectives to those Standards instead of these shown here.

COMPETENCIES		SHOW-ME STANDARDS
A. Basic Computer Concepts		
1.	Demonstrate ethical conduct in everyday procedures (e.g., piracy, licensing, intellectual property, etc.)	1.10, 4.3
2.	Use basic computer terminology correctly	CA3
3.	Identify parts of a computer (components and media)	CA3
4.	Identify components of the information system model (input, process, output, storage)	CA3
5.	Compare mainframes, minicomputers, scientific workstations and microcomputers	CA3, 1.2
6.	Differentiate between common operating systems, including file systems	1.2
7.	Perform basic computer filing tasks (e.g., naming, saving, deleting, and moving files)	1.8
B. Networking Concepts		
1.	Use networking terminology correctly	CA3
2.	Draw, label, and explain functions of networking layers (OSI)	CA3
3.	Identify parts of a network	CA3
4.	List the functions of a network operating system (NOS)	CA3
5.	Identify types of networks (e.g., LAN, WAN, MAN)	CA3
6.	Identify shared network resources (e.g., hardware, software)	CA3
7.	Log on/log off successfully	2.7
8.	Access shared network resources (e.g., hardware, software files)	2.7
9.	Describe capabilities of network wiring systems	1.10
10.	Explain network topologies (e.g., star, bus, ring, broadband, baseband)	1.4

11.	Diagram network topologies (e.g., star, bus, ring, broadband, baseband)	1.4
12.	Explain principles of basic network security (e.g., IP spoofing, packet sniffing, password compromise, encryption)	1.2
13.	List advantages and disadvantages of decentralized computing	1.8
14.	Document network configurations (e.g., workstation, server, router, replication)	1.8
15.	Identify types of licensing agreements	CA3
16.	Explain current network standards and pseudo-standards (e.g., IEEE, RFCs, ISO)	1.4

C. Safety

1.	List features of an ergonomically correct workstation	HPE6
2.	Describe the operation of fire suppression resources including fire extinguishers	HPE7
3.	Identify electrical, mechanical, chemical, and environmental hazards	CA4
4.	Practice workplace safety (e.g., first aid, eye protection, anti-static procedures)	HPE6
5.	Demonstrate proper use of hand tools	HPE6
6.	Demonstrate proper use of electrically operated equipment including grounding	HPE6

D. Communications

1.	Present solutions in a positive, tactful manner	1.2
2.	Practice constructive problem solving with customers	1.10, 3.3
3.	Explain concepts of remote access and phone support	1.8, 1.10
4.	Describe software and hardware tools to support individuals with disabilities	1.10
5.	Explain the need for network policy documentation	1.2
6.	Create basic user and/or network administrator documentation	CA1
7.	Demonstrate effective telephone support skills	CA1
8.	Present an oral proposal for a network installation	CA6
9.	Prepare a written request for proposal	CA1
10.	Create technical correspondence	CA4

E. Hardware		
1.	Verify operation of common peripherals	1.4
2.	Install and uninstall common peripherals	CA3
3.	Install a network adapter	CA3
4.	Install and configure a network concentrator/hub	CA3
5.	Install and configure a modem	CA3
6.	Perform basic hardware upgrades (e.g., hard drive, CD-ROM, memory, video and sound cards)	CA3
7.	Specify internal components for a network server	1.2
8.	Differentiate between routing and switching/bridging	1.4
9.	Differentiate between various current protocols (e.g., TCP/IP, IPX/SPX, NETBEUI, DHCP)	1.4
10.	Identify industry standard workstation hardware systems	1.6
11.	Compare current industry standard busses	1.6
12.	Identify industry standard server hardware systems	1.6
F. Connectivity		
1.	Attach a connector to the end of a cable successfully	1.4
2.	List the advantages and disadvantages of different topologies	1.6
3.	Explain advantages and disadvantages of wireless technologies	1.6
4.	Explain the difference between standard analog and digital lines	1.6
5.	Interpret network diagram	1.5
6.	Explain different functions of network communications equipment (e.g., modems, DSUL/CSU, bridges, switches, routers, hubs)	1.6
7.	Implement asynchronous connectivity (e.g., Internet, Intranet, dial-up, SLIP, PPP)	1.4
8.	Differentiate areas of responsibilities between the telecommunications providers' responsibilities and their clients' responsibilities	1.4
G. Software		
1.	Analyze and modify system configuration files	1.4
2.	Launch an application	1.10
3.	Install and verify device drivers	1.10
4.	Perform basic software upgrades	1.10
5.	Establish client environments to utilize network resources	1.10
6.	Implement virus protection and removal procedures for a network	1.10
7.	Implement virus protection and removal procedures for a stand-alone computer	1.10
8.	Use file compression programs	1.10
9.	Install and configure operating systems	1.10

H. Network Operations		
1.	Demonstrate the ability to access the Internet	2.7
2.	Create and delete user groups and aliases	1.10
3.	Implement secured access to network resources	1.10
4.	Describe procedures that are executed through login scripts	CA4
5.	Create printer queues	1.10
6.	Enable printer capture	CA3, 1.4, 1.5, 1.6, 1.10, 2.5, 3.7, 4.4, 4.5
7.	Maintain printer queues	1.10
8.	Perform backup procedures	1.10
9.	Restore files successfully	1.10
10.	Maintain operational logs (e.g., maintenance, security, transaction)	CA4
11.	Maintain data availability (e.g., rights and trustees)	1.10
12.	Create a customized login scrip	CA4
13.	Install a print server	1.10
14.	Install remote printing	1.10
15.	Implement various current protocols (e.g., TCP/IP, IPX/SPX, NETBEUI, DHCP)	1.10
I. System Risk Management		
1.	Describe backup procedures	CA4
2.	Describe the importance of system security (e.g., passwords, user accounts)	2.1
3.	Demonstrate forms of network security (e.g., passwords, user accounts)	1.10
4.	Explain the concept of firewall usage	2.1
5.	Discuss virus protection procedures on a network	2.1
6.	Identify system management software	1.4
7.	Perform console operations	1.10
8.	Perform site survey	1.10
9.	Develop a disaster recovery plan	CA4
10.	Analyze licensing requirements	1.4
11.	Compare directory services	1.4
12.	Evaluate equipment for purchase	1.2
13.	Recommend different levels of fault tolerance (e.g., transaction tracking/logging, auditing, uninterruptible power sources [UPS], mirroring, duplexing, redundant array of inexpensive disks)	1.10
14.	Design and implement a network security system	1.10

J. Troubleshooting		
1.	Verify client access to network resources	1.10
2.	Utilize existing technical resources for problem resolution (e.g., Internet, technical manuals, e-mail)	1.10
3.	Identify sources of electromagnetic interference	1.4
4.	Use troubleshooting tools to determine problem areas	1.10
5.	Analyze system log files	1.4
6.	Perform and interpret diagnostics	1.10
7.	Troubleshoot printer queues	1.10
8.	Troubleshoot software/hardware integration problems	1.10

Competencies developed in 1998